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UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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Ex parte AKLI ADJAOUTE
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Appeal 2018-007443
Application 14/815,940[1]
Technology Center 3600

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Before DEBRA K. STEPHENS, CARL WHITEHEAD JR., and
JASON V. MORGAN, *Administrative Patent Judges*.

STEPHENS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from a final rejection of
claims 1–16, which are all of the claims pending in the application. We
have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

CLAIMED SUBJECT MATTER

According to Appellants, the claims are directed to a method "for
protecting groups of digital electronic appliances used collectively for
monitoring the operations of machines and for issuing predictions, warnings

and calls for preventative maintenance and equipment failure interventions"
(Spec. 1 § Field of the Invention). The method "empanels several different
artificial intelligence (AI) classification technologies into a 'jury' uses
combinational digital logic to render 'verdicts' about the need for service
and impending equipment failures of the machines they monitor" (Abstract).
Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method for monitoring the operation of machines and for
issuing calls for preventative maintenance and predictions of
equipment failures, comprising:

attaching monitoring devices, instruments, and
transducers to a machine subject to operational failures;

reading in measurements and data obtained by the
monitoring devices, instruments, and transducers regarding the
status and operation of the machine;

empaneling a jury of classification models as jurors to
assess the measurements and data obtained with a separate
computer programmed for that purpose;

presenting all the measurements and data obtained to the
jury with a separate computer programmed for that purpose;

classifying the measurements and data obtained and
presented to the jury according to a logic decision tree and
outputting a juror vote that includes a confidence assessment
with a separate computer programmed for that purpose;

classifying the measurements and data obtained and
presented to the jury according to a neural network and
outputting another juror vote that includes a confidence
assessment with a separate computer programmed for that
purpose;

classifying the measurements and data obtained and
presented to the jury according to a fuzzy logic and outputting
another juror vote that includes a confidence assessment with a
separate computer programmed for that purpose;

classifying the measurements and data obtained and
presented to the jury according to a smart agent profiling and
outputting another juror vote that includes a confidence

assessment with a separate computer programmed for that purpose;

classifying the measurements and data obtained and presented to the jury according to business rules and outputting another juror vote that includes a confidence assessment with a separate computer programmed for that purpose;

classifying the measurements and data obtained and presented to the jury according to case-based reasoning and outputting another juror vote that includes a confidence assessment with a separate computer programmed for that purpose;

collecting all the juror votes into a single ballot and mathematically apply individual weights in calculations to each respective juror vote with respect to its own confidence assessment and a priori data inputs with a separate computer programmed for that purpose;

tallying a verdict from the results obtained in the previous steps, and that predicts an operational failure of the machine by outputting a report with a separate computer programmed for that purpose; and

tallying another verdict from the results obtained in the previous steps, and that summons a particular service procedure and/or a replacement part for the machine by outputting another report so the costs of maintaining the machine are reduced.

REJECTIONS

Claims 1–16 stand rejected under 35 U.S.C. §101 as not being directed to patent-eligibility subject matter (Final Act. 2–5).[2]

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[2] Claim 2 is objected to for being wrongly numbered (Final Act. 2). This issue is not before us (*see* MPEP §§ 706.01, 120 (9th ed., Rev 9, March 2014)).

ANALYSIS

Principles of Law

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter" (35 U.S.C. § 101). However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable (*Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014)).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court's two-step framework, described in *Mayo* and *Alice* (*id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012))). In accordance with that framework, we first determine what concept the claim is "directed to" (*see id.* at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.")).

Concepts determined to be abstract ideas, and thus patent-ineligible, include certain methods of organizing human activity such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)). Concepts determined to be patent-eligible include physical and chemical processes, such as "molding rubber products" (*Diamond v. Diehr*, 450 U.S. 175, 192 (1981)); "tanning, dyeing, making waterproof cloth, vulcanizing India

4

rubber, smelting ores" (*id.* at 184 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))). In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that "[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula" (*Diehr*, 450 U.S. at 176; *see also id.* at 191 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula")). Having said that, the Supreme Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment" (*id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 ("It is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.")).

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application" (*Alice*, 573 U.S. at 221 (quotation marks omitted)). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea]'" (*id.* (quoting *Mayo*, 566 U.S. at 77)). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention" (*id.*).

USPTO January 7, 2019, Revised Section 101 Memorandum

The USPTO published revised guidance on the application of § 101 (*see* 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019 ("Revised 101 Guidance")). Under the Revised 101 Guidance, we first look to whether the claim recites:

(1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and

(2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, and conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

The Examiner concluded claims 1–16 are directed to patent-ineligible subject matter (Final Act. 2–7). Appellants argue the invention as recited in claims 1–16 is directed to patent-eligible subject matter (App. Br. 6–12). Therefore, the issue presented by the arguments is whether the Examiner erred in concluding the invention as recited is patent-ineligible.

STEP 1

Section 101 provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title" (35 U.S.C. § 101). Independent claim 1 recites a method for monitoring and independent claim 8 recites to a group of electronic appliances for monitoring and, thus, each is directed to a statutory class of invention within 35 U.S.C. § 101, i.e., a process and a machine, respectively.

STEP 2A, Prong 1

Under Step 2A, Prong 1 of the Revised 101 Guidelines, we must determine whether the claims, being directed to statutory classes of invention, nonetheless fall within a judicial exception.

Because there is no single definition of an "abstract idea" under *Alice* step 1, the PTO has recently synthesized, for purposes of clarity, predictability, and consistency, key concepts identified by the courts as abstract ideas to explain that the "abstract idea" exception includes the following three groupings:

> (a) Mathematical concepts – mathematical relationships, mathematical formulas or equations, mathematical calculations;

(b) Certain methods of organizing human activity – fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions); and

(c) Mental processes – concepts performed in the human mind (including an observation, evaluation, judgment, opinion)

(*see* Revised 101 Guidance, 84 Fed. Reg. at 52 (citations omitted)). According to the Revised 101 Guidance, "claims that do not recite [subject] matter that falls within these enumerated groupings of abstract ideas should not be treated as reciting abstract ideas," except in rare circumstances (*see* Revised 101 Guidance, 84 Fed. Reg. at 53). Even if the claims recite any one of these three groupings of abstract ideas, these claims are still not "directed to" a judicial exception (abstract idea), and thus are patent eligible, if "the claim as a whole integrates the recited judicial exception into a practical application of that judicial exception" (*see* Revised 101 Guidance, 84 Fed. Reg. at 53). Under the Revised 101 Guidance, if the claim does not recite a judicial exception (a law of nature, natural phenomenon, or subject matter within the enumerated groupings of abstract ideas above), then the claim is patent-eligible at Step 2A, Prong 1. This determination concludes the eligibility analysis, except in situations identified in the Revised 101 Guidance.

The Examiner contends the claims are "directed toward the abstract idea of monitoring the operation of machines" and "monitoring the operation of machines is a fundamental economic practice" (Final Act. 3). Therefore,

8

according to the Examiner, "claim 1 includes an abstract idea" (*id.*). In particular, the Examiner determines "[t]he limitations in the claim that set forth the abstract idea are: 'a method for reading data; assessing data; presenting data; classifying data; collecting data; and tallying data'" (*id.* at 3, 5).

We determine the claim does not recite "certain methods of organizing human activity" (*see* Revised 101 Guidance, 84 Fed. Reg. at 52). In particular, we agree with Appellants that the claims do not recite a fundamental economic practice (App. Br. 10). Specifically, we do not find "monitoring the operation of machines" as recited in the instant application, is a fundamental economic principle (such as hedging, insurance, or mitigating risk). Rather, the claims recite monitoring operation of machines using neural networks, logic decision trees, confidence assessments, fuzzy logic, smart agent profiling, and case-based reasoning (*see* Spec., Claims 1 and 8).

Nor do we see how the claimed invention recites commercial or legal interactions, or managing personal behavior or relationships or interactions between people, for example (*see* Revised 101 Guidance, 84 Reg. at 52). As such, we are not persuaded the claim as recited falls within the category of "certain methods of organizing human activity."

Nor do we determine the claims as recited are directed to a mental process. A claim recites a mental process when the claim encompasses acts people can perform using their minds or pen and paper (*see, e.g., CyberSource Corp. v. Retail Decisions, Inc.,* 654 F.3d 1366, 1372–73 (Fed. Cir. 2011) (determining that a claim whose "steps can be performed in the human mind, or by a human using a pen and paper" is directed to an

unpatentable mental process)). This is true even if the claim recites that a generic computer component performs the acts (*see, e.g.*, *Versata Dev. Grp., Inc. v. SAP Am., Inc.,* 793 F.3d 1306, 1335 (Fed. Cir. 2015) ("Courts have examined claims that required the use of a computer and still found that the underlying, patent-ineligible invention could be performed via pen and paper or in a person's mind"); *see also* Revised 101 Guidance, 84 Fed. Reg. at 52 n.14 ("If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category unless the claim cannot practically be performed in the mind.")).

Claims 1 and 8 as recited are not practically performed in the human mind. As discussed above, the claims recite monitoring operation of machines using neural networks, logic decision trees, confidence assessments, fuzzy logic, smart agent profiling, and case-based reasoning (Spec., Claims 1 and 8). Specifically, the claims recite "empaneling a jury of classification models as jurors to assess the measurements and data obtained" and "presenting all the measurements and data obtained to the jury" (*id.*). The claims further recite classifying the measurement and data according to "a logic decision tree," "a neural network" "a fuzzy logic," "a smart agent profiling," "business rules," "case-based reasoning," and outputting a juror vote that includes a confidence assessment for each classification" (*see* Spec., Claim 1). Claim 8 similarly recites modules and specifically, "a smart-agent juror module," "a data-mining juror module," "a fuzzy logic juror module," "a business-rules juror module," "a case-based reasoning juror module," "an associative-learning juror module," "a clustering juror module," and "a metarule arbiter module" (*see* Spec., Claim

8). Lastly, claim 1 recites tallying two different verdicts from the classification results and claim 8 recites "an output device that transforms the composite prediction output into human-readable form."

Moreover, the Specification discloses "embodiments of the present invention empanel several different artificial intelligence (AI) classification technologies into a 'jury' that uses combinational digital logic to render 'verdicts' about the need for service and impending equipment failures of the machines they monitor" (Spec. 3). The Specification further describes "[multiple artificial intelligence technologies [of the described system are] embedded and include[e] . . . particular smart-agents with real-time and long-term profiling, data mining, neural networks, business rules, fuzzy logic, case-based reasoning, etc. Each technology independently returns its own predictions, confidence scores, and reason details" (*id.* at 10).

In other words, the "classifying" steps of claims 1 and "modules" of claim 8 when read in light of the Specification, recite a method and system difficult and challenging for non-experts due to their computational complexity. As such, we conclude that one of ordinary skill in the art would not find it practical to perform the aforementioned "classifying" steps recited in claim 1 and function of the "modules" recited in claim 8 mentally. We conclude that it is not practical for one of ordinary skill in the art to perform the aforementioned the "classifying" steps of claims 1 and functions of the "modules" of claim 8 step mentally.

Also, although the Specification identifies some of the criteria used by the "classifying" steps of claim 1 and the "modules" of claim 8, the specific mathematical algorithm or formula is *not* explicitly recited in the claims. As such, under the recent Revised 101 Guidance, the claims do not recite a

mathematical concept (*see, e.g.*, **Subject Matter Eligibility** *Examples:*
Abstract Ideas, at 7 (Jan. 7, 2019) (discussing Example 38 and noting that
"[t]he claim does not recite a mathematica1 relationship, formula, or
calculation. While some of the limitations may be based on mathematical
concepts, the mathematical concepts are not recited in the claims")).

As such, based on the record before us, we are persuaded that the
Examiner erred in Step 2A, Prong 1 by determining that the claims recite an
abstract idea.

Step 2A, Prong 2

Even assuming arguendo, that the claims had recited an abstract idea,
we are persuaded the idea is integrated into a practical application as
discussed in the Revised 101 Guidance (Revised 101 Guidance 54).
Specifically, we determine the claim is recited "in a manner that imposes a
meaningful limit, such that the claim is more than a drafting effort designed
to monopolize" the idea (*id.*). Here, claim 1 recites:

> tallying a verdict from the results obtained in the
> previous steps, and that predicts an operational failure of the
> machine by outputting a report with a separate computer
> programmed for that purpose; and
> tallying another verdict from the results obtained in the
> previous steps, and that summons a particular service procedure
> and/or a replacement part for the machine by outputting another
> report so the costs of maintaining the machine are reduced.

We are persuaded claim 1 and commensurately recited claim 8 recite
additional elements that integrate the recited invention into a practical
application. In particular, Appellant describes:

> The present invention relates to methods for protecting groups of
> digital electronic appliances used collectively for monitoring the

> operation of machines and for issuing predictions, warnings and
> calls for preventative maintenance and equipment failure
> interventions, and more particularly to methods that use
> computer data processing systems to empanel several artificial
> intelligence (AI) classification technologies into a "jury" that
> renders "verdicts" about the need for service and impending
> equipment failures

(Spec. 1). Appellant further describes in a virtual world of a computer, a parallel panel or "jury" of classification engines each apply different techniques and methods to analyze, interpret, and scrutinize identical parallel attribute sets, which replace an actual physical machine (*id.* at 7). Like the claims in *DDR,* claims 1 and 8 "do not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet" (*DDR Holdings, LLC v. Hotels.com, L.P.,* 773 F.3d 1245, 1257 (Fed. Cir. 2014)). "Instead, the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks" (*id.*). Likewise, Appellant's claims address a problem specifically using several artificial intelligence classification technologies to monitor the operation of machines and to predict preventative maintenance needs and equipment failure (Spec. 1). Claims 1 and 8 both recite "monitoring the operation of machines and for issuing calls for preventative maintenance and predictions of equipment failure." Claim 1 further recites "tallying" the classification results into a verdict that "predicts an operational failure of the machine by outputting a report with a separate computer" and into another verdict that "summons a particular service procedure and/or a replacement part for the machine by outputting another report so the costs of maintaining the machine are reduced." Similarly, claim 8 further recites "produc[ing] a

single composite prediction output." We, therefore, find the claimed additional elements integrate the recited idea into a practical application.

Conclusion

As discussed above, we are persuaded that the Examiner erred in Step 2A, Prong 1 by determining that the claims recite an abstract idea. We are further persuaded that, even assuming arguendo, the claims recite an abstract idea, the claims integrate the recited idea into a practical application in Step 2A, Prong 2. Accordingly, we determine the claims as recited are directed to patent-eligible subject matter.

CONCLUSION

In summary:

Claim(s) Rejected	Basis	Affirmed	Reversed
1–16	§ 101		1–16
Overall Outcome			1–16

DECISION

For the reasons above, we reverse the Examiner's rejection of claims 1–16.

REVERSED